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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,164	03/29/2004	Christopher A. Fuchs	1-1-18	2999

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Lucent Technologies Inc.  
Docket Administrator - Room 3J-219  
101 Crawfords Corner Road  
Holmdel, NJ 07733-3030

EXAMINER

ANDERSON, DENISE BROWN

ART UNIT PAPER NUMBER

2877

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

2)

## Office Action Summary

Application No.

10/812,164

Applicant(s)

FUCHS ET AL.

Examiner

Denise B. Anderson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 10-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-9 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/29/04</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-9, drawn to a polarization-based optical analyzing device, classified in class 356, subclass 364.
- II. Claims 10-16, drawn to an polarization-based interferometric device, classified in class 356, subclass 491.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are directed to related inventions (polarization analyzing devices). The related inventions are distinct if the inventions as claimed do not overlap in scope, i.e., are mutually exclusive; the inventions as claimed are not obvious variants; and the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect. See MPEP § 806.05(j). In the instant case, inventions I and II are related, but distinct, because they both involve polarization analysis. However, they cannot be used together, as one is not a subset of the other and would not accomplish the measurement objective if there were any attempt to combine them. Furthermore, applicant states in the abstract that the two different embodiments are use separately ("The system includes either multiple partial polarization splitters or multiple optical interferometers").

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with John F. McCabe (Registration # 42,854) on 5/8/06 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-9. Applicant in replying to this Office action must make affirmation of this election. Claims 10-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Objections***

Claim 7 is objected to because of the following informalities: the language "substantially proportional" is not defined in the specification. Examiner interprets the applicant to mean that any for any product of a constant and the intensity measured, that the constant is close to unity in value. Appropriate correction is required.

Claim 8 is objected to because of the following informalities: the language "of an intensity of one of linear polarization of light" is confusing. Examiner interprets the applicant to mean that one polarization component of the light from the partial polarization splitter is measured by the detector as the given percentage. Appropriate correction is required.

Claim 9 is objected to because of the following informalities: the language "substantially non-parallel" is not defined in the specification. Examiner interprets the applicant to mean that the polarization components emerge from the splitters at some angle that is close to 90 degrees. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Groot (USPN 5,663,793) in view of Katayama (USPAPN 2004/0095865).**

As to claims 1, 2, 4 and 9, de Groot discloses, in figure 1, a second partial polarization splitter (PPS) 101 and an ordinary polarization splitter 155, which receives as an input, an output from partial polarization splitter 101. De Groot does not expressly disclose two partial polarization splitters together before the ordinary polarization beam splitter. Katayama discloses, in figure 4, two PPS (first PPS 10 and second PPS 12). Each of the PPS of de Groot and Katayama split polarizations along different (claims 2 and 4), non-parallel (claim 9) directions. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the two PPS of Katayama in place of the single PPS of de Groot for the purpose of further extracting a desired polarization component for detection. Furthermore, It would have been obvious to one of ordinary skill in the art at the time of the invention to separate polarizations along different directions, as done for the 1<sup>st</sup> and 2<sup>nd</sup> splitters of Katayama for the purpose of ensuring that the polarizations do not further mix along their paths.

As to claim 3, de Groot discloses, in figure 1, a quarter wave plate 160 located between the 2<sup>nd</sup> PPS 101 and the ordinary polarization beam splitter 155.

As to claims 5 and 6, de Groot discloses, in figure 1, a third and fourth detector (158, 159) for measuring light from the 5<sup>th</sup> and 6<sup>th</sup> optical outputs (156, 157). De Groot

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does not expressly disclose a second light detector to measure light from the third optical output. Katayama et al disclose, in figure 4, a second light detector 9 for measuring light from the 3<sup>rd</sup> optical output. It would have been obvious to one of ordinary skill in the art at the time of the invention to place a detector at the output of the PPS of Katayama for the purpose of measuring the intensity of the output beam. Katayama and de Groot also disclose the claimed invention except for a first detector. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add additional detectors to measure various intensities, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

As to claim 8, de Groot discloses a partial polarization splitter 101. De Groot does not expressly disclose the magnitude of the intensities that emerge from the PPS. Katayama disclose PPS intensities of "about 50%" (paragraph 0068). About can be inferred to mean that it is not exactly 50% (i.e., exact to within some small percentage). It would have been obvious to one of ordinary skill in the art at the time of the invention to experimentally determine the percentage of splitting for the PPS of Katayama to be used in the device of De Groot for the purpose of improving the precision of the detected results. Furthermore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to experimentally determine the PPS beam-splitting ratio, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

**Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over de Groot (USPN 5,663,793) and Katayama (USPAPN 2004/0095865), as applied to claim 1 above, and further in view of Azzam (USPN 5,337,146).**

As to claim 7, Katayama and de Groot disclose the claimed invention except for using a tetrahedral basis set. Azzam discloses polarimeter instrumentation for simultaneously measuring all 4 Stokes parameters using 4 spatially arranged photodetectors and matrices representing the intensity vectors (column 1, lines 54-65 and column 5, lines 47-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a tetrahedral basis set of vectors as described by Azzam for the polarization apparatus of de Groot and Katayama for the purpose of accurately determining the polarization of a source of radiation.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gage (USPN 5,282,188) discloses a polarimetric apparatus with 1 partial polarization splitter and a polarization beam splitter for differential detection and enhanced Kerr effects.

### ***FAX/Telephone Information***

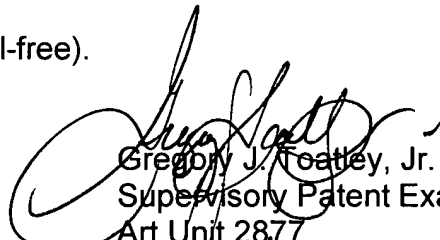
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise B. Anderson whose telephone number is 571-272-8324. The examiner can normally be reached on Mon-Fri (9:30 AM - 6 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Denise B Anderson, PhD  
Assistant Patent Examiner  
Art Unit 2877

DBA DBA  
Date Signed: 5/12/06

  
Gregory J. Toatley, Jr.  
Supervisory Patent Examiner  
Art Unit 2877  
15/11/06